

## **REMARKS**

The Office Action mailed March 14, 2003, has been received and reviewed. Claims 1 through 11, 13, 16 through 25, 51 through 61, 63 and 66 through 75 are currently pending in the application. Claims 1 through 11, 13, 16 through 25, 51 through 61, 63 and 66 through 75 stand rejected. Applicant has amended claims 13, 19, 51 and 63, and respectfully requests reconsideration of the application as amended herein.

### **Supplemental Information Disclosure Statement**

Please note that a Supplemental Information Disclosure Statement was filed herein on January 9, 2003, and that a copy of the PTO/SB/08A was returned with the outstanding Office Action, however, one reference was not initialed by the Examiner. Applicant respectfully requests that all of the information cited on the PTO/SB/08A be made of record herein. For the sake of convenience, a second copy of the January 9, 2003, Supplemental Information Disclosure Statement, PTO/SB/08A with copy of cited references are enclosed herewith. It is respectfully requested that an initialed copy of the PTO/SB/08A evidencing consideration of the cited references be returned to the undersigned attorney.

### **35 U.S.C. § 102(b) Anticipation Rejections**

#### Anticipation Rejection Based on JP Patent No. 53,163,977 A to Takemoto

Claims 1 and 51 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takemoto (JP Patent No. 53,163,977 A). Applicant respectfully traverses this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The reference is not anticipatory with respect to claim 1 in its present state, as the reference (see FIG. 4) merely teaches the prior art approach to die encapsulation already acknowledged and described by Applicant. Specifically, the reference introduces a resin

encapsulant at one side of an injection mold assembly (9,11), the resin encapsulant sweeping horizontally across the mold cavity and over the top of the semiconductor chip (3). In contrast, Applicant claims, *inter alia*, “introducing a flowable material **onto said at least one surface of** said at least one semiconductor substrate [with conductive elements thereon] **in a substantially vertical direction** in said at least one mold cavity. . . .” (emphasis added). The semiconductor chip surface in the reference having conductive elements (termed “electrodes”) thereon is horizontal, and the encapsulant, of necessity, moves thereacross in a horizontal direction with all of the attendant disadvantages pointed out in Applicant’s specification. Thus, claim 1 is not anticipated.

Similary, claim 51 as presently amended to correct an inadvertent omission of a word recites, *inter alia*, “introducing a flowable material **onto said at least one surface of** said at least one semiconductor substrate [with conductive elements thereon] **in an upward, non-horizontal direction** in said at least one mold cavity . . . .” (emphasis added) Again, the reference causes the resin encapsulant to flow horizontally across the top of semiconductor chip, and certainly not “upwardly.”

Reconsideration and withdrawal of the rejections of claims 1 and 51 is respectfully solicited.

### 35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on JP Patent No. 53,163,977 A to Takemoto as applied to claims 1 and 51 above, and further in view of JP Patent No. 6-151492 to Sony Corporation

Claims 2 through 11, 16 through 21, 24, 52 through 61, 63, 66 through 71 and 74 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takemoto (JP Patent No. 53,163,977) as applied to claims 1 and 51 above, and further in view of Sony Corporation (JP Patent No. 6-151492). Applicant respectfully traverses this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.**

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Claims 2-11, 16-21, 24, 52-61, 63, 66-71 and 74 are each allowable as respectively depending from an allowable independent claim.

Further, there is no suggestion or motivation, absent Applicant's own specification, for combining the two references. The Sony reference teaches encapsulation of a die paddle type lead frame-mounted semiconductor chip, while Takemoto teaches encapsulation of a bare die with a resin encapsulant and (*see* FIG. 3) apparently placement of leads 7 thereover after the encapsulant block is formed in a leads over chip configuration.

In addition, claims 17, 19, 63 and 67 recite providing conductive structures protruding from the semiconductor substrate, which the references, alone or in combination, fail to teach.

Obviousness Rejection Based on JP Patent No. 53,163,977 A to Takemoto in view of JP Patent No. 6-151492 to Sony Corporation as applied to claims 1-11, 16-21, 24, 51-61, 66-71 and 74 above, and further in view of U.S. Patent No. 6,081,997 to Chia et al.

Claims 13, 25, 63 and 75 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takemoto (JP Patent No. 53,163,977) in view of Sony Corporation (JP Patent No. 6-151492) as applied to claims 1 through 11, 16 through 21, 24, 51 through 61, 66 through 71 and 74 above, and further in view of Chia et al. (U.S. Patent No. 6,081,997). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 13 is allowable as ultimately depending from claim 1. Claim 63 is allowable as ultimately depending from claim 51.

Claims 25 and 75 are allowable as respectively depending from claims 1 and 51, and further because, contrary to the Examiner's assertion, Chia fails to teach or suggest configuring portions of an inner surface of a transfer mold to at least partially receive conductive structures. Instead, Chia is mounting a flip-chip configured semiconductor die 12 to a printed circuit board 14. The solder bumps 16 contact the surface of the printed circuit board 14, not an inner surface

of a transfer mold. Solder bumps 16 are reflowed to secure semiconductor die 12 to substrate 14 to form a metallurgical bond with terminal pads thereon, and solder bumps 16 are not received in any recesses in any disclosure found by Applicant's attorney in the Chia reference.

Reconsideration and withdrawal of the rejections of claims 13, 25, 63 and 75 is respectfully requested.

Obviousness Rejection Based on JP Patent No. 53,163,977 A to Takemoto as applied to claims 1 and 51 above, and further in view of U.S. Patent No. 5,471,369 to Honda et al.

Claims 22, 23, 72 and 73 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takemoto (JP Patent No. 53,163,977) as applied to claims 1 and 51 above, and further in view of Honda et al. (U.S. Patent No. 5,471,369). Applicant respectfully traverses this rejection, as hereinafter set forth.

Applicant notes that the reasoning set forth by the Examiner in this rejection has nothing to do with the subject matter recited in each of claims 22, 23, 72 and 73, each of which deals with the application of either positive or negative pressure to the flowable material during introduction thereof. Instead, it appears that the Examiner is relying upon Honda for a teaching of the use of multiple dice in a single package, which Applicant nowhere claims. The only possible claims Applicant has been able to identify to which the Examiner might be attempting to apply Honda from the language in the rejection involve the provision of a large-scale semiconductor substrate in the form of a plurality of interconnected semiconductor dice (*see*, for example, claim 19). However, Honda teaches the use of individual dice which may be secured to each other, but which do not, in combination, form a large-scale substrate such as a wafer or a portion of a wafer. Clarification or withdrawal of the rejection is respectfully requested.

## ENTRY OF AMENDMENTS

The amendments to claims 13, 19, 51 and 63 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

## CONCLUSION

Claims 1 through 11, 13, 16 through 25, 51 through 61, 63 and 66 through 75 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,

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Date: June 16, 2003  
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<b>TRANSMITTAL FORM</b> <i>(to be used for all correspondence after initial filing)</i>	Application Number	09/652,503
	Filing Date	August 31, 2000
	First Named Inventor	Vernon M. Williams
	Group Art Unit	2823
	Examiner Name	W. Brewster
	Attorney Docket Number	2269-4303US (99-0584.00/US)

## ENCLOSURES (check all that apply)

Postcard receipt acknowledgment (attached to the front of this transmittal)

Duplicate copy of this transmittal sheet in the event that additional filing fees are required under 37 C.F.R. § 1.16

Preliminary Amendment

Response to Restriction Requirement/Election of Species Requirement dated

Amendment in response to office action dated March 14, 2003

Amendment under 37 C.F.R. § 1.116 in response to final office action dated

Additional claims fee - Check No. in the amount of \$

Letter to Chief Draftsman and copy of FIGS. with changes made in red

Transmittal of Formal Drawings

Formal Drawings ( sheets)

Information Disclosure Statement, PTO/SB/08A (08-00);  copy of cited references

Second copy of 1/9/03 Supplemental Information Disclosure Statement; PTO/SB/08A (08-00) and cited references

Associate Power of Attorney

Petition for Extension of Time and Check No. in the amount of \$

Petition

Fee Transmittal Form

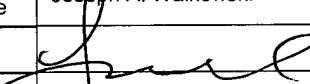
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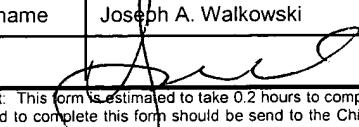
## Remarks

The Commissioner is authorized to charge any additional fees required but not submitted with any document or request requiring fee payment under 37 C.F.R. §§ 1.16 and 1.17 to Deposit Account 20-1469 during pendency of this application.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual name	Joseph A. Walkowski	Registration No. 28,765
Signature		
Date	June 16, 2003	

## CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	Joseph A. Walkowski
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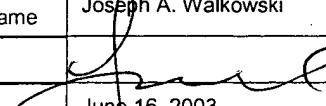
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		Application Number	09/652,503
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		First Named Inventor	Vernon M. Williams
		Group Art Unit	2823
		Examiner Name	W. Brewster
		Attorney Docket Number	2269-4303US (99-0584.00/US)

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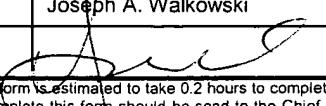
<input checked="" type="checkbox"/> Postcard receipt acknowledgment <input checked="" type="checkbox"/> Duplicate copy of this transmittal sheet in the event that additional filing fees are required under 37 C.F.R. § 1.16 <input type="checkbox"/> Preliminary Amendment <input type="checkbox"/> Response to Restriction Requirement/Election of Species Requirement dated <input checked="" type="checkbox"/> Amendment in response to office action dated March 14, 2003 <input type="checkbox"/> Amendment under 37 C.F.R. § 1.116 in response to final office action dated <input type="checkbox"/> Additional claims fee - Check No. in the amount of \$ <input type="checkbox"/> Letter to Chief Draftsman and copy of FIGS. with changes made in red <input type="checkbox"/> Transmittal of Formal Drawings <input type="checkbox"/> Formal Drawings ( sheets)	<input type="checkbox"/> Information Disclosure Statement, PTO/SB/08A (08-00); <input type="checkbox"/> copy of cited references <input checked="" type="checkbox"/> Second copy of 1/9/03 Supplemental Information Disclosure Statement; PTO/SB/08A (08-00) and cited references <input type="checkbox"/> Associate Power of Attorney <input type="checkbox"/> Petition for Extension of Time and Check No. in the amount of \$ <input type="checkbox"/> Petition <input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Assignment Papers (for an Application)	<input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Other Enclosure(s): (please identify below)	
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## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Joseph A. Walkowski	
Signature		
Date	June 16, 2003	

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